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GENETICS

Will Blending of Races Produce Super-men?

By MARJORIE MACDILL

Will future ages see the world populated by a race of super-men or super-morons?

Fast modern transportation, that has carried civilized peoples into the remote corners of the earth, is bringing about problems of race mixture such as have never existed before in the history of mankind. Attention has been called to this condition by Dr. Charles B. Davenport, director of the Department of Genetics, of the Carnegie Institution of Washington.

Thousands of enterprising pioneers from overcrowded Europe are tapping the resources of the tropics and are intermarrying with the natives. America's great melting pot has been fluxing together adventurers from every corner of the globe for over three generations. With transoceanic airways in prospect that will make contacts between Czech and Chinese, Eskimo and Estonian a matter of casual occurrence, statesmen as well as eugenists and biologists are asking what the consequences of this great mingling of races is going to be. Should it be welcomed as tending to produce higher types than we now have or should steps be taken to prevent immigration to any country as a menace to its culture?

It is difficult to arrive at a dispassionate scientific analysis of the outcome of human hybridity because the subject is one that almost invariably, even in the best of minds, arouses a certain amount of emotional bias.

Biologists tell us that two striking results of hybridization stand out in the plant and animal kingdoms. One is rapidity of growth and large body size, with sometimes increased resistance to disease, as in the mule. The second is increased variability especially in the second generation. New combinations of traits arise, some of which are little suited to pass the censor of natural selection, while some may be superior to those



THE VIGOROUS BLOOD OF THE VIKINGS runs side by side with that of languorous South Sea Islanders in the veins of this personable young Norwegian-Polynesian

of the original pair, thus giving the hybrids a good start in the struggle for existence.

Reviewing the haphazard experiments in human hybridization in the past it becomes clear that each race that has persisted a long time in a distinct environment has achieved certain adaptations to that environment. The black skin of the tropical negro protects him from sunburn. The fat of the Eskimo is a blanket against the cold of the frozen North. The intelligence and ambition of the European is one of the outcomes of the competition of a life of commerce that arose on a continent that nature adapted for trade with a deeply indented coast line. The great industry of the Chinese arose from the pressure of dense population and ever present danger of famine.

Blends of these varied characteristics came about first through men's migratory wanderings. Later came the conquest of distance through

transportation by boats propelled by wind and then by steam. Now new countries are being opened up by rail, by automobile and by airplane. Anyone can go anywhere and certainly automobile sales and steamship bookings will bear witness that everybody and his wife and family is on the way. Those that have not the latter perquisites of joy and happiness acquire them after they get there. Consequently mating of diverse nationalities is occurring as never before.

In this crossing of races now going on there are sometimes combinations of conditions which lead to disharmony from the conflict of developmental tendencies.

"Thus," explained Dr. Davenport, "in America we have a union of races, characterized by large teeth in large jaws, with others having small teeth in small jaws. It has been suggested by orthodontists, specialists who correct irregular teeth, that a combination of an hereditary tendency to large teeth, combined with hereditary small jaws produces the crossing of teeth which has made orthodontia so important a branch of medicine in the United States. Such crowded jaws are in striking contrast with the uniform arcades that one sees in comparatively unmixed, primitive peoples.

"Mental and temperamental incompatibilities may also arise, as we see in the mulattoes of North America which combine something of a white man's intelligence and ambition with an insufficient intelligence to realize that ambition. This leads in the hybrid to dissatisfaction and a feeling that he is not getting a fair deal."

On the other hand some of the crosses achieved in the Hawaiian Islands are very successful. Interracial marriages from at least five different strains make Hawaii the happy hunting ground of geneticists. The fact that there is no social discrimination against the offspring of mixed

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Blending of Races

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ancestry offers an opportunity for scientific observation of race mixture in Honolulu that is almost unparalleled.

According to a report made to the Hawaiian Academy of Science some 13,000 Caucasian-Hawaiians and 8,000 Asiatic-Hawaiians comprise seven per cent. of the total population of the Islands. The Chinese have been making small contributions to the general mixture for a generation but now the Japanese have begun to marry out of their own race in large numbers. Over 44 per cent. of the men of American and North European ancestry are said to be marrying women of races other than their own while the Portuguese and Filipinos follow suit. The general use of the English language and the steady building up of common manners and customs not the least of which are the movies and Ford cars are cited as contributing factors to the growing amalgamation.

The progeny of the Chinese-Hawaiian cross stands first among all hybrids in industry and self support, in Dr. Davenport's estimation. They have the well stabilized, docile and patient temperament of the Hawaiian combined with the intellectual capacity of the Chinese. In the Hawaiian-white unions the restless, ambitious and individualistic temperament of the Caucasian appears to come out on top.

The Filipino in Hawaii contains elements of Chinese, Japanese, Negrito and Caucasian, but the result of all this mixing does not seem to be particularly happy. The Filipino hybrid is over-emotional and weakly inhibited. Though they constitute only 10 per cent. of the population, they are responsible for over 42 per cent. of the murders and 48 per cent. of the sex offences. Scientists suggest that the secret of Filipino ineffectiveness may lie in the conflict of the various racial temperaments.

The Eurasian offspring of Hindus and Europeans stand India's devastating climate better than their white parents but in general have the reputation of being dishonest, lazy and lacking in perseverance. They refuse frequently to learn the native language and in consequence are less useful in clerical positions than the more intelligent of the natives themselves.

In the Dutch East Indies, on the other hand, children of Dutch-Javanese parentage are noted for their beauty and intelligence. In the past girls of this blended ancestry have been sought upon occasion for the harem of the Sultan of Java. In Sumatra the sons of Europeans and native women that have been trained in Europe have filled administrative positions with distinction.

Descendants from Spanish-Indian crosses on the west coast of South America are among the leaders of that continent today. Portuguese mulattoes in Brazil, however, show great variability both physically and mentally. They do not have good muscular development and are subject to tuberculosis but they are habitually bold, courageous and intelligent. Many display a bent for politics while others go in for literary and scientific pursuits. In Brazil the door of opportunity is open to all men of talent and ability and some of the highest political offices in the country are held down by able mulattoes.

The negro-white hybrids of the United States are apparently more subject to venereal disease and tuberculosis than the full-blooded negro. This condition may be due to social rather than hereditary factors, however, from the facts that they come more in contact with the whites and that they live in unsanitary city houses rather than in the open country. The full black is easily satisfied and loyal to his employer but the mulatto is



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Aztec Tombs Discovered

Excavations on the Aztec pyramid of Tenayuca in the Valley of Mexico by the Department of Archæology of the Mexican Ministry of Education this year have disclosed a curious sepulcher and have brought to light altogether 95 serpents hewn of stone set like soldiers around the pyramid walls to guard the sacred edifice.

The structure believed to be the top of a sepulcher is a hollow casket-like stone box set on a stone platform near the southeast corner of the pyramid at its base. The stone casket is about four feet long and a foot and a half wide, and is decorated on the inside with polychrome paintings—symbolic of death. The illustrations are six craniums and other figures in blue, yellow, red, white and black.

The exterior of the stone box carries out the same symbolism by means of eight craniums carved of stone and set into the masonry at regular intervals around three sides. There are also square stone insets showing conventionalized figures of what are thought to represent crossed ulna bones, resembling fancy Christian crosses placed askew.

The casket was empty when the excavators found it, but it may once have contained votive offerings to the dead. It is thought that under the solid platform on which the superficial casket rests, there is probably a true sepulcher with some human remains of some ancient Aztec lord or high priest, sufficiently important enough to have been buried by the pyramid.

Stone craniums have also been found set in the sloping pyramid walls at varying intervals, giving the impression that the structure may have been dedicated to Mictlantecuhltli, Aztec god of death, as well as to Quetzalcoatl, god of the Evening Star, from the apparent orientation of the coiled figure of a huge snake of masonry in front of the pyramid, with the star Venus.

Two sides of the pyramid have now almost been completely excavated. On the south side there is a low rampart running around the base of the structure, surmounted by 43 coiled serpents of stone, highly conventionalized. In the center and at regular intervals the serpents are larger and extend their grotesque heads with their monstrous fangs out beyond the battle line of the

(Just turn the page)



CHARLES WARDELL STILES
Arbiter Nominationis

"And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field."

Thus is it recorded that even before he became a gardener and a husbandman—indeed, even before he became a husband—man was a systematic zoologist. Since there was nobody else on earth, he had no troubles over questions of priority: "whatsoever Adam called every living creature, that *was* the name thereof." If our great grandsire had only taken the trouble to publish a *Species Animalium*, 4004 B. C. would most certainly supersede the Linnean, Cuvierian, and all other dates of reference.

Whether nomenclatural disagreements began with Babel or at some other time, they have by now certainly reached a high degree of confusion, which zoologists generally, being men of peace, much deplore. Hence their International Congresses, which are a species of ecumenical councils, designed to reconcile the differences among the brethren and—when it becomes lamentably necessary—to pronounce excommunication and anathema. Hence also the International Committee on Zoological Nomenclature, which is a sort of pontifical college, carrying on in the interims between meetings of the full body.

The secretaryship of this committee is one of the most difficult, most thankless and most coveted positions in the whole scientific world. The holder of this post must be as nearly infallible in nomenclatural matters as it is possible for a single human

(Just turn the page)

Nova and Two Comets

Discovery by the same two astronomers of a nova, or "new" star, and a new comet, within three days, is a new astronomical record which was made last week at the Hamburg Observatory at Bergedorff, Germany. According to cables received at the Harvard College Observatory, which acts as the American clearing house for announcements of astronomical discoveries, Dr. A. Schwassman and his associate, Dr. Wachmann, set this record.

The astronomers found a new comet in the constellation of Pisces, the Fishes, on November 15. This star group is in the southern sky now in the late evening, east of the so-called "Great Square of Pegasus." But as the comet was only of the 14th magnitude when found, it can only be seen with a large telescope. It was moving towards the southwest, its exact position, in the astronomical coordinates, being 1 hour 32 minutes and 12 seconds right ascension, and 20 degrees and 53 minutes north declination.

The nova was found on November 18. Then it was of the tenth magnitude, also too faint to be seen except with powerful telescopic aid. Its position is 5 hours, 15 minutes and 12 seconds right ascension and 16 degrees and 38 minutes north declination. This is in the constellation of Orion, the familiar star group which is now seen low in the southeastern evening sky.

Upon receiving the report of the nova, Prof. Harlow Shapley, in charge of the Harvard College Observatory, made an inspection of the photographs of the sky that are taken regularly at Harvard and found that since September the new star had been unknowingly photographed twenty times. Spectrum photographs made immediately upon receipt of the news from Germany show the object to be a true nova. From the photographic record of the star's career, it was determined that on October 1 it reached its maximum brightness of near seventh magnitude, not quite visible to the naked eye. This is evidence that the new star is now on the wane.

A nova is not a "new" star, but a previously faint one that suddenly becomes bright. This continues only temporarily, however, for it soon begins to return to its former obscurity. Just what causes the outburst, which is really an explosion, is not known. One theory that has been held is that it is due to two stars col-

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Nova and Two Comets

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liding, but now it is supposed that such collisions are much too rare to account for the frequency of such outbursts. The principal belief now is that the explosion is due to some sudden atomic change. During the summer another German astronomer, Dr. Max Wolf, of the Heidelberg University Observatory, found a nova, which was then found to have been photographed at the Harvard Observatory several months previously, in June.

For the second time in as many visits Dr. George Van Biesbroeck, of the Yerkes Observatory, has discovered Encke's Comet which is once again approaching near the earth. Encke's Comet returns to this part of space once in about three and a quarter years. On its last visit, in 1924, Dr. Van Biesbroeck was the first to locate it, as he picked it up on July 31. On Saturday evening, November 12, he located it again. Astronomers throughout the world have been watching for it, as its present return has been fully anticipated. This is also the third time that it has been first located at the Yerkes Observatory for on its 1914 visit the late Prof. E. E. Barnard discovered it on September 17.

Of four periodic comets that have returned this year, Prof. Van Biesbroeck has found three.

When found on the twelfth, Encke's Comet was at right ascension 22 hours 57 minutes 8.2 seconds, and declination 8 degrees 54 minutes 13 second north. This is the constellation of Pegasus, the principal feature of which is the "Great Square" seen high in the south about 8.00 o'clock on November evenings. The comet was then near the star known as zeta Pegasi, the bright one to the southwest of the square, and about half the length of one of the sides from the southwest corner.

However, as the comet was of the 16th magnitude, it was much too faint to be seen except with a very large telescope. Probably, it will not become visible to the unaided eye.

Science News-Letter, November 26, 1927

The United States uses about three times as much rubber as all the rest of the world together.

Apple juice is often combined with other fruit in jelly because it contains pectin, the necessary jellying substance.

Arbiter Nominations

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being to be, he must conduct correspondence by the basketful, he must have an endless fund of tact and geniality for the reconciliation of colleagues who get to spitting at each other, he must teach his brethren patience and forbearance with irrecconcilables who insist upon their pet heresies as the real true faith. That Dr. Stiles has successfully held down this job since 1898, when many of the young men who are now setting up in business as systematic zoologists were not even born, is a high tribute to both his scientific ability and his personality, and an appreciated honor to American zoology by the rest of the world.

Though his success as secretary of this committee is perhaps the most shining feather in Dr. Stiles' cap, it is by no means the only one. He has turned his special talents chiefly on the exceedingly difficult zoological problems presented by internal parasites, and has been in the service of the U. S. Public Health Service since 1902. Other institutions and organizations that have claimed part-time attention from him during and before that time have included the Smithsonian Institution, the U. S. Department of Agriculture, the Johns Hopkins University, Georgetown University. His work with the Rockefeller commission for the eradication of the hookworm disease was largely instrumental in wiping out this plague in America.

Dr. Stiles was born in New York State in 1867. He received his education at Connecticut Wesleyan University, the College de France, the Universities of Berlin and Leipzig, the Pasteur Institute and the Trieste Zoological Station. Besides the degrees won in fair fight, he has a whole boxful of honorary ones, and holds memberships and fellowships in so many scientific societies that it is doubtful whether he can keep track of them all.

Science News-Letter, November 26, 1927

The walking fish can walk on dry land on its fins.

Basalt, one of the common rocks of earth, is lacking on the moon.

The natural lifetime of an elephant is said to be 150 to 200 years.

More than 85,000 hogs die each year in shipping the hog crop to market.

Aztec Tombs Discovered

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others. There are 13 of these larger serpents on the east side.

The south side has a similar rampart with 52 such carved serpents, of which 19 are prominent by their extra size. The protective covering of earth which has recently been removed has preserved remnants of the bright colors with which the figures were once painted. On the other two sides the building has been badly damaged at the bottom, but it is thought that the guarding wall of snakes once ran all around the base of the structure.

The pyramid is otherwise in good condition and is believed to have been covered with earth by the Indians to save it from the fate of most of the Aztec temples after the arrival of Cortes. The superstructure which must once have stood on the flat top of the pyramid is gone, and many stones from the north and west side of the pyramid have been carried away long ago for building material.

Small idols of baked clay have been found during the excavations, bearing curious Aztec countenances, some of which appear to be portraits and others merely conventionalized figures. There are also broken knives of obsidian, perhaps once used in the sacrificial rites which took place on the pyramid centuries ago, as well as lance or spear heads.

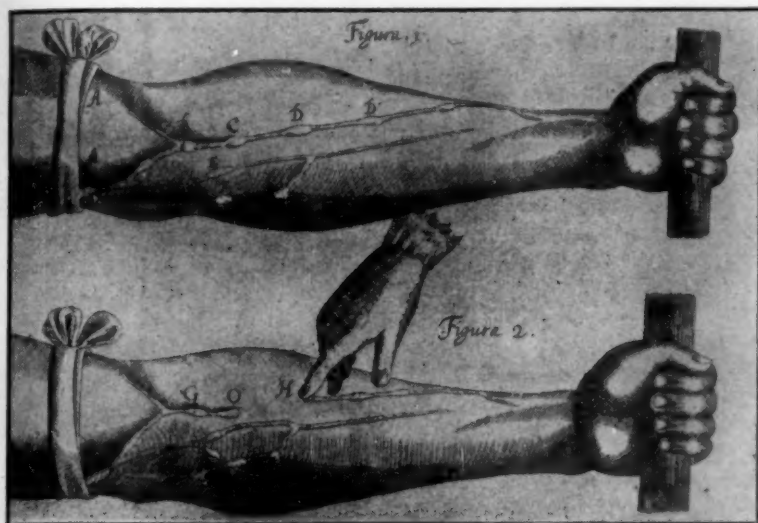
Small ornamented and perforated clay disks used to rest the point of the spindle were also found as well as many painted pottery fragments. Two large stone shields, like those in Aztec codices, a large human figure carved of stone and a great stone eagle are among the other notable relics recovered.

A much smaller but similar pyramid at Santa Cecilia about a mile away is also known but no regular work of excavation has been done there. The pyramid of Santa Cecilia is curious for the large number of stone craniums which once decorated its sides but which have long since fallen. More than fifty of these craniums have been collected in an orderly pile and resemble rows of real skulls in some ancient catacomb.

A third pyramid of the same type is near the town of Cuernavaca in the neighboring state of Morelos, and a study of the three is being made by the Mexican Department of Archaeology.

Science News-Letter, November 26, 1927

Classics of Science: Circular Movement of the Blood



HARVEY'S OWN ILLUSTRATION OF HIS EXPERIMENT which he described as follows: Let an arm be tied up above the elbow as if for phlebotomy (A, A, fig. 1). At intervals in the course of the veins, especially in labouring people and those whose veins are large, certain knots or elevations (B, C, D, E, F,) will be perceived, and this not only at the places where a branch is received (E, F), but also where none enters (C, D): these knots or risings are all formed by valves, which thus show themselves externally. . . . Apply the thumb or finger over a vein in the situation of one of the valves in such a way as to compress, and prevent any blood from passing upwards from the hand; then, with a finger of the other, streak the blood in the vein upwards till it has passed the next valve above, the vessel now remains empty; the finger being removed for an instant, the vein is immediately filled from below; apply the finger again and having in the same manner streaked the blood upwards, again remove the finger below, and again the vessel becomes distended as before; and this repeat, say a thousand times, in a short space of time. And now compute the quantity of blood which you have thus pressed up beyond the valve, and then multiplying the assumed quantity by one thousand, and you will find that so much blood has passed through a certain portion of the vessel; and I do now believe that you will find yourself convinced of the circulation of the blood and its rapid movement.

Dr. William Harvey here describes his reasons for believing that blood is sent out by the beating of the heart through the arteries, thence finding its way to the veins which return it to the heart. Although the microscope was then unknown, Harvey was able to demonstrate his belief by the easily duplicated experiment quoted here. It was not until four years after Harvey's death that Malpighi saw blood circulating in the lung of a frog.

AN ANATOMICAL DISSERTATION UPON THE MOVEMENT OF THE HEART AND BLOOD IN ANIMALS, BEING A STATEMENT OF THE DISCOVERY OF THE CIRCULATION OF THE BLOOD, by William Harvey, Franckfort-on-the-Maine, 1628.

Quantity of Blood

Thus far I have spoken of the passage of the blood from the veins into the arteries, and of the manner in which it is transmitted and distributed by the action of the heart; points to which some, moved either by the authority of Galen or Columbus, or the reasonings of others, will give their adhesion. But what remains to be said upon the quantity

and source of the blood which thus passes, is of a character so novel and unheard-of that I not only fear injury to myself from the envy of a few, but I tremble lest I have mankind at large for my enemies, so much doth wont and custom become a second nature. Doctrine once sown strikes deeply its root, and respect for antiquity influences all men. Still the die is cast, and my trust is in my love of truth, and the candour of cultivated minds. And sooth to say, when I surveyed my mass of evidence, whether derived from vivisections, and my various reflections on them, or from the study of the ventricles of the heart and the vessels that enter into and issue from them, the symmetry and size of these conduits,—for Nature doing nothing in vain, would never have given them so large a relative size without a purpose,—or from observing the arrangement and intimate structure of the valves in particular and of the other parts of the heart in general,

with many things besides, I frequently and seriously bethought me and long revolved in my mind, what might be the quantity of blood which was transmitted, in how short a time its passage might be offered, and the like. But not finding it possible that this could be supplied by the juices of the ingested aliment without the veins on the one hand becoming drained, and the arteries on the other getting ruptured through the excessive charge of blood, unless the blood should somehow find its way from the arteries into the veins, and so return to the right side of the heart; I began to think whether there might be a movement, as it were, in a circle. Now this I afterwards found to be true; and I finally saw that the blood, forced by the action of the left ventricle into the arteries, was distributed to the body at large, and its several parts, in the same manner as it is sent through the lungs, impelled by the right ventricle into the pulmonary artery, and that it then passed through the veins and along the vena cava, and so round to the left ventricle in the manner already indicated. This movement we may be allowed to call cir-

(Just turn the page)

ARCHAEOLOGY

Irish Relics Not Genuine

The chipped stones from the sea-coast of Sligo, Ireland, which were recently described by the British archæologist J. P. T. Burchell as implements made by early Stone Age men, have become the subject of scientific controversy. A committee of Dublin investigators, R. A. S. Macalister, J. Kaye Charlesworth, R. Lloyd Praeger and A. W. Stelfox, have reported to Nature that they have investigated the caves on the Irish coast, and find that they are apparently of a much later date, geologically, than the Old Stone Age. They declare further that the chipped stones in question are of limestone, a most unsuitable material for implements, and that they can not find any evidence that the chipping is the result of anything but accidental fracture.

Science News-Letter, November 26, 1927

ORTHOEPEY

Accents Wild

On my shaky grammatical perch
I am made, very often, to lurch,
By some otherwise quite
Sane and sensible wight
Who says *re-search*, instead of
re-search.

Science News-Letter, November 26, 1927

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Circulation of the Blood

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cular. in the same as *Aristotle* says that the air and the rain emulate the circular movement of the superior bodies; for the moist earth, warmed by the sun, evaporates; the vapours drawn upwards are condensed, and descending in the form of rain, moisten the earth again. By this arrangement are generations of living things produced; and in like manner are tempests and meteors engendered by the circular movement, and by the approach and recession of the sun. . .

Circulation Confirmed

But lest anyone should say that we give them words only, and make mere specious assertions without any foundation, and desire to innovate without sufficient cause, three points present themselves for confirmation, which being stated, I conceived that the truth I contend for will follow necessarily, and appear as a thing obvious to all. First,—the blood is incessantly transmitted by the action of the heart from the vena cava to the arteries in such quantity that it cannot be supplied from the ingesta, and in such a manner that the whole must very quickly pass through the organ; Second,—the blood under the influence of the arterial pulse enters and is impelled in a continuous, equable, and incessant stream through every part and member of the body, in much larger quantity than were sufficient for nutrition, or than the whole mass of fluids could supply; Third,—the veins in like manner return this blood incessantly to the heart from parts and members of the body. These points proved, I conceive it will be manifest that the blood circulates, revolves, propelled and then returning, from the heart to the extremities, from the extremities to the heart, and thus that it performs a kind of circular movement.

Let us assume either arbitrarily or from experiment, the quantity of blood which the left ventricle of the heart will contain when distended, to be, say two ounces, three ounces, or one ounce and a half—in the dead body I have found it to hold upwards of two ounces. Let us assume further, how much less the heart will hold in the contracted than in the dilated state; and how much blood it will project into the aorta upon contraction;—and all the world allows that with the systole something is always projected, a necessary consequence demonstrated in the third chapter, and obvious from the struc-

ture of the valves; and let us suppose as approaching the truth that the fourth, or fifth, or sixth, or even but the eighth part of its charge is thrown into the artery at each contraction; this would give either half an ounce, or three drachms, or one drachm of blood as propelled by the heart at each pulse into the aorta; which quantity, by reason of the valves at the root of the vessel, can by no means return into the ventricle. Now in the course of half an hour, the heart will have made more than one thousand beats, in some as many as two, three, and even four thousand. Multiplying the number of drachms propelled by the number of pulses, we shall have either one thousand half ounces, or one thousand times three drachms, or a like proportioned quantity of blood, according to the amount which we assume as propelled with each stroke of the heart, sent from this organ into the artery; a larger quantity in every case than is contained in the whole body; In the same way, in the sheep or dog, say that but a single scruple of blood passes with each stroke of the heart, in one half hour we should have one thousand scruples, or about three pounds and a half of blood injected into the aorta; but the body of neither animal contains above four pounds of blood, a fact which I have myself ascertained in the case of the sheep.

Upon this supposition, therefore, assumed merely as a ground for reasoning, we see the whole mass of blood passing through the heart, from the veins to the arteries, and in like manner through the lungs.

But let it be said that this does not take place in half an hour, but in an hour, or even in a day; any way it still manifests that more blood passes through the heart in consequence of its action, than can either be supplied by the whole of the ingesta, or than can be contained in the veins at the same moment.

William Harvey was born April 1, 1578, at Folkestone, England, and died June 3, 1657, at the home of one of his brothers in Roehampton. He received the B. A. degree from Cambridge University at the age of nineteen, and went to Padua to study medicine. Taking his degree as Doctor of Medicine at 24, he established himself in London, where he was very successful. He became a fellow of the Royal College of Physicians in 1609, and in 1616 began a course of lectures in which his views on the circulation of the blood were explained. The novelty of these views caused much discussion and comment, but they were not rejected by the medical profession, as proponents of weird medical theories of our day would have us believe.

Science News-Letter, November 26, 1927

Say you saw it advertised in the *SCIENCE NEWS-LETTER*

Blending of Races

(Continued from page 338)

dissatisfied and often rebellious. This difference is believed to be caused by the disharmony of the different temperaments of the two races.

Lapp-Norwegian and Lapp-Swedish crosses are pretty much of a failure. The parent races are physically dissimilar and the resulting progeny fall ready victims to tuberculosis and strong drink, and have a tendency toward psychic disturbances and criminal behavior. People with a Lapp-Swedish-Finn ancestry, however, have tall bodies and narrow elongated faces. This length of limb and physiognomy does not always show up in the first generation but is



THE GRANDMOTHER OF THIS HYBRID might be called the founder of a new race. A spotted negro-white hybrid herself, seventeen spotted and sixteen normal colored descendants are down to her credit, according to the records of the American Genetics Association. All these spotted hybrids are white in front. Note how the white skin grows white hair

apparent farther down in the family tree. The royal family of Sweden, the tall rulers of one of the tallest races in the world, show this lengthy result of much intermarriage with other strains.

Unhappily in the past most race mixing has come about between the worst elements, social and otherwise, of both races. There is little likelihood of the offspring of the riff-raff of Europe and the easy virtue of a primitive tribe being a credit to either parental strain. Likewise when a cross occurs between races that are physically and mentally widely different, the children are bound to suffer from the internal war of temperaments.

Looking at the experiments in race crossing that have been performed in the course of the world's progress it is evident that interbreeding is not always bad. When the bride and groom-to-be are of sound and healthy stock their progeny are likely to be encouraging products. It is particularly important that the physical and temperamental differences between the two races shall not be too wide. This compatibility of racial temperaments and a healthy racial history are just as essential in the joining of races as in the marriage of individuals.

And looking into the future, it may be that out of the great earth melting pot there will emerge during the course of milleniums new races, approaching perhaps in brain or brawn the super-men imagined by the poets and the idealists.

Science News-Letter, November 26, 1927

Michigan has the longest coast line of any state.

Gasoline tax receipts indicate that motorists are using more gasoline this year than last.

A gift by a former mayor of Minneapolis is providing the city with a hospital for crippled children.

Fishermen recently captured a 20,000 pound whale after struggling with it four days in a net.

The Denver City Park Zoo is said to have the finest collection of North American animals in existence.

It has been proposed that the famous old Coast Guard cutter, the *Bear*, be turned into an Arctic museum.

Bobbed Hair in Rome

Hairdressers must have been as highly skilled and as well remunerated in ancient Rome as members of that prosperous clan are today, judging by the elaborate coiffeurs of Roman empresses shown in a series of portrait busts that have just appeared in *Art and Archaeology*, the journal of the Archaeological Society of Washington.

The styles of coiffeur represented in the period from 50 B. C. to 300 A. D. ranged from an ultra-modern looking bob of tight thick curls to an elaborate coronet arrangement of twists and braids that could hardly have all grown on the lady's own head, according to Miss Ernestine F. Leon, who is conducting this research on the tonsorial art of antiquity.

Curling irons and pomade jars found at Pompeii bear testimony that many lovely Romans did not have naturally curly hair, while the headquarters of a thriving false hair trade, it is known from several references in Latin literature, was located at the Portico Phillipus in the Campus Martius at Rome.

Unfortunately there is no authentic portrait bust of Cleopatra. The only concrete notion posterity can get of the famous Egyptian's charms comes from coins struck with her image during her reign. The coins do not bear the profile of any ravishing beauty but as Miss Leon points out this may be due partly to the deficiency of the minter's art and partly to the fact that the queen had more fascination of manner than regularity of features. According to this imperfect record, Cleopatra had a thin face with heavy features and an aquiline nose. Her luxuriant locks were combed forward and divided into seven strands, twisted each into a separate roll and drawn back over the top and sides of the head to the nape of the neck. Here the ends were fastened into a small hard knot tied with a fillet the ends of which were left hanging down loose.

The bust of Livia, the wife of Augustus Caesar, who was about sixteen years younger than Cleopatra, shows a classical simplicity in hairdressing that is almost severe when compared to her more dashing contemporary.

Science News-Letter, November 26, 1927

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B	Philosophy.
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GB	Physical geography.
GC	Oceanology and oceanography.
GF	Anthropogeography.
GN	Anthropology. Somatology. Ethnology. Ethnography. Prehistoric archaeology.
GR	Folklore.
GT	Manners and customs.
GV	Sports and amusements. Games.
HC	Economic history and conditions. National production.
HD	Economic history. Agriculture and Industries.
HE	Transportation and communication.
HF	Commerce.
HM	Sociology. General.
HQ	Family. Marriage. Woman.
HV	Social pathology.
L	Education.
M	Music.
N	Fine arts.
P	Philology and linguistics.
Q	Science. General.
QA	Mathematics.
QB	Astronomy.
QC	Physics.
QD	Chemistry.
QE	Geology.
QH	Natural history.
QK	Botany.
QL	Zoology.
QM	Human anatomy.
QP	Physiology.
QR	Bacteriology.
R	Medicine. General.
S	Agriculture. General.

SB	Field crops. Horticulture. Landscape gardening. Pests and plant diseases.
SD	Forestry.
SF	Animal culture. Veterinary medicine.
SH	Fish culture and fisheries.
SK	Hunting. Game protection.
T	Technology. General.
TA	Engineering. General.
TC	Hydraulic engineering.
TD	Sanitary and municipal engineering.
TE	Roads and pavements.
TF	Railroads.
TG	Bridges and roofs.
TH	Building construction.
TJ	Mechanical engineering.
TK	Electrical engineering and industries.
TL	Motor vehicles. Cycles. Aeronautics.
TN	Mineral industries. Mining and Metallurgy.
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TR	Photography.
TS	Manufactures.
TT	Trades.
TX	Domestic science.
U	Military science. General.
V	Naval science. General.

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060	General societies
070	Newspapers
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100	PHILOSOPHY—
110	Metaphysics
120	Special metaphysical topics
130	Mind and body
140	Philosophical systems
150	Mental faculties. Psychology
160	Logic
170	Ethics
180	Ancient philosophers
190	Modern philosophers
200	RELIGION—
210	Natural theology
220	Bible
230	Doctrinal. Dogmatics. Theology
240	Devotional. Practical
250	Homiletic. Pastoral. Parochial
260	Church. Institutions. Work
270	Religious history
280	Christian churches and sects
290	Ethnic. Non-Christian
300	SOCIOLOGY—
310	Statistics
320	Political science
330	Political economy
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400	PHILOLOGY—
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430	German
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450	Italian
460	Spanish
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530	Physics
540	Chemistry
550	Geology
560	Paleontology
570	Biology
580	Botany
590	Zoology
600	USEFUL ARTS—
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620	Engineering
630	Agriculture
640	Domestic economy
650	Communication. Commerce
660	Chemical technology
670	Manufactures
680	Mechanic trades
690	Building
700	FINE ARTS—
710	Landscape gardening
720	Architecture
730	Sculpture
740	Drawing. Decoration. Design
750	Painting
760	Engraving
770	Photography
780	Music
790	Amusement
800	LITERATURE—
810	American
820	English
830	German
840	French
850	Italian
860	Spanish
870	Latin
880	Greek
890	Minor languages
900	HISTORY—
910	Geography and travels
920	Biography
930	Ancient history
	Modern
940	Europe
950	Asia
960	Africa
970	North America
980	South America
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METEOROLOGY

1927 Summer Cool in East

The past summer was cooler than usual in the eastern states but hardly enough to justify the predictions of a summerless year, according to Prof. Alfred J. Henry, of the U. S. Weather Bureau. Prof. Henry has just announced the results of a study of abnormal summers. He finds that at New Haven, Conn., and at New Bedford, Mass., where the records extend back for a century, the past summer ranks No. 30 and 32 in coolness. At both of these places, the famous "year without a summer" of 1816 was the coolest, but at New Haven there have been 29 summers since that have been cooler than the past one, while at New Bedford there have been 31. In the western states, however, the summer was unusually warm. At Portland, Oregon, only the summer of 1926 was warmer than that of 1927, according to records which extend back for half a century. At San Francisco, 1927 ranks third as a warm summer, only 1888 and 1925 having been hotter.

In the middle west and east, only the records of Lynchburg, Virginia, Memphis, Tenn., and Cincinnati, Ohio, show 1927 to have had the coldest summer in fifty years. At New York, Philadelphia, Chicago, St. Louis and Indianapolis the last summer was the second coolest, while at Washington it was third coolest.

"In the last fifty-odd years," says Prof. Henry, "four summers of exceptional coolness, 1903, 1907, 1915 and 1927, have occurred. Comparing these summers one finds that there is little to choose from as to which was the most conspicuous as to the depression of temperature. Considering the length of time the low temperature prevailed and the area affected and the minimum temperature recorded, 1915 should be given first place. Each month of that summer, including May and in a less degree September, was abnormally cold.

"The greatest depression of the temperature in the summer of 1907 was in June following an exceptionally cool April and May. The cool summer of that year may therefore be considered as a holdover effect from the cold spring immediately preceding.

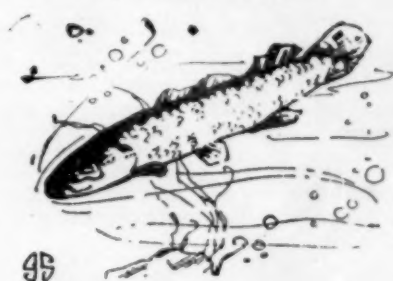
"The remaining three summers, 1903, 1915 and 1927, have several features in common, the most striking being the fact that each of them was preceded either in May or June by flood-producing rains in the lower

(Just turn the page)

BIOLOGY

NATURE RAMBLINGS

By FRANK THONE



Bowfin

Bowfin, dogfish, sawyer, lawyer, brindle, grindle.

All this long litany of names is borne by one innocent, obstinate, rather stupid fish. It is recited frequently by zoologists as a text on the vanity of English or "common" names. Every one of these titles is applied to the fish somewhere or other, but none of them ranges as far as does the fish itself. In Virginia, according to Dr. Jordan, the fish achieves the distinction of a fully-developed Christian name, middle initial, and surname: John A. Grindle, as though he were an authentic F. F. V.

The bowfin is a fish entitled to coat-armor and heraldic quarterings, if antiquity of lineage means anything. For he comes of the very ancient group of fishes known as the ganoids, whose monster ancestors swam the seas of the earth in that remote age known as the Devonian, long before the coal swamps weltered under the Carboniferous sun, and immeasurably long before the dinosaurs wallowed in Cretaceous lakes.

The bowfin has a common heritage with two other ganoid fishes, one in Africa and the other in remote Australia. These are often played up for special attention because their specialized swim-bladders can be used for lungs. But though the bowfin is never formally called a lungfish, it nevertheless has a well developed bladder-lung, and can live for surprising periods out of water. It is said to be the most tenacious of life of all North American fishes.

Dr. Jordan who has been awarded the wreath of Izaak Walton by unanimous consent of American fishermen and ichthyologists, recommends the bowfin highly as a game fish. He bites very readily, and fights like a demon. But the sportsman must be contented with the sport, for the fish is of no earthly use after it is caught.

Science News-Letter, November 26, 1927

OPTICS

Great Glass Disc Cooling

Sometime, about next February, scientists at the Bureau of Standards will know whether or not they have the largest disc of optical glass ever cast in the United States.

During the war, when European sources were closed, the Bureau began to make optical glass. Last May these experiments reached a climax with the casting of a disc of glass 70 inches in diameter and 12½ inches thick. This is the largest disc that has ever been cast in the United States, and one of the largest in the world.

But such a disc is not finished when it is cast. Glass conducts heat very poorly. It is very hot when cast, for then it is in a molten condition. If simply exposed to the air as soon as it begins to harden, the outside would cool much more quickly than the interior. In doing so it would shrink, and the result would be that the disc would soon be merely a pile of small pieces of broken glass. Even if cooled more slowly, strains might be set up in the disc that would cause it to crack as soon as efforts were made to grind it into the dish shape of a reflecting telescope mirror.

Accordingly, it is necessary to extend the cooling over a period of many months. In making such a big disc, it is carefully enclosed in sand and fire clay so that it takes nearly a year to cool. This is called annealing. By February, 1928, the 70-inch disc at the Bureau will have cooled sufficiently for the scientists to uncover it. Then they will know whether they have a disc or some pieces of broken glass.

Annealing is not always successful. The largest disc that has ever been cast, from which the 100-inch mirror of the big reflecting telescope at the Mt. Wilson Observatory was made, was completed only after a number of attempts. This was made at St. Gobain, France, where, before the war, the principal factory for large discs was located. Time after time discs were cast, only to find months later that they had cracked in annealing. Even the one finally used was not perfect, as it was cast in three layers, and when completed showed two layers of bubbles, like the filling in a layer cake. So it may be that the American optical glass workers will find in a few months that they have to try again.

Even if the disc comes out of the

(Just turn the page)

Great Glass Disc Cooling

(Continued from page 345)

annealing safely, it is not known what will be done with it. The St. Gobain works were demolished, and many of their most skilled workers killed, in the war, so large discs are very hard to obtain. Several American observatories are in the market for big discs for reflecting telescopes, but just how the Bureau's disc could be transferred to one of them is not certain. There are legal difficulties hampering the sale or gift of the glass, and so it might take an act of Congress to dispose of it.

But the Bureau officials are not worrying about this bridge at present. What they are chiefly interested in is whether or not they have the disc.

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Tarahumara children of Mexico run distances of 20 to 30 miles a day after their fathers.

The Alpine willow, the smallest tree in this country, does not exceed six inches in height.

It is never too cold to snow, but the great dryness of very cold air may make snowfall unlikely.

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They Say

Peccavimus!

In reading the article on Dr. John M. Coulter which appeared in the October 29th issue of the SCIENCE NEWS-LETTER I find several errors. Dr. Coulter went from Lake Forest University to the University of Chicago, not from Indiana University as was stated. He is a member of the Board of Trustees and the Board of Scientific Advisors of the Boyce Thompson Institute, not the "head"; Dr. William Crocker is the director and executive head of the Institute and has been since its organization. It was along the lines of Dr. Crocker's suggestion that the Boyce Thompson Institute was established and it was when Colonel Thompson was looking for a plan by which he might aid food production that Colonel Thompson and Dr. Coulter met for the first time.

—Zeliaette Troy, Librarian, Boyce Thompson Institute for Plant Research, Yonkers, N. Y.

(In "Who's Who in America," Dr. Crocker is listed as director of the Boyce Thompson Institute, and Dr. Coulter as its head. The SCIENCE NEWS-LETTER was led into this particular error through a literal adherence to the wording of the latter biographical note.—Ed.)

Orientation

I am having our students in the course in Orientation in Science use the SCIENCE NEWS-LETTER as a text and we find it most satisfactory.

—Prof. David W. Cornelius, University of Chattanooga.

Valuable

The weekly NEWS-LETTERS are indeed fine, and I have found them valuable more than in any of my courses.

—Frances Diebold, Kalamazoo College.

Interest

I find this publication invaluable for creating interest in my science classes, both with students of high school grade and college students.

—Kathryn A. Gilmore, Marion Junior College.

Science News-Letter, November 26, 1927

Chinese children rarely have rickets, chiefly because they get plenty of sunlight.

A new device that weighs two ounces can be attached to a bird's back to register the number of its wing strokes in flying, and how far the wings move.

A dinosaur skeleton found in East Africa was so large and heavy that 80 natives were needed to carry the bones to the ship.

It is reported that a minutely cut inscription has been found on the famous statue of the Apollo Belvedere, stating that Apollonius, son of Nestor, made the statue.

1927 Summer Cool in East

(Continued from page 345)

Missouri valley and adjacent territory. It may also be pointed out that the interval between these cool summers is exactly twelve years. If we go back another twelve years to 1891 we find that the mean July temperature of that year was the lowest on record up to that time in a large part of the country. The flood-producing rains were, however, absent to a great extent. Whether the heavy rains are the primary cause of the cool summers or whether both events are due to a common cause, is, of course, unknown."

In Alaska and Canada, Prof. Henry points out, a period of warm weather began at the same time as the cool weather in the United States.

Prof. Henry also suggests that the coolness of 1816 may have been exaggerated. During that year, he says, "there is not the slightest justification for assuming that the summer temperatures generally throughout the United States were unduly low."

Science News-Letter, November 26, 1927

A new ultra-violet ray machine reveals invisible erasures and alterations in important documents and checks.

The pilgrimages taken by so many millions of people in India each year are held to be one cause of spreading disease.

Tarahumara Indians engage in Marathon dances that last all day and all night without a single instant for rest.

In the past seven years, twelve kinds of foreign parasites have been turned loose in fields infested by the corn borer to fight the pest.

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Evolutionary Religion

Extract from an address by Dr. Robert A. Millikan, physicist, at the University of Colorado semi-centennial celebration.

Within the past half century as a direct result of the findings of modern science there has developed an evolutionary philosophy,—an evolutionary religion, too, if you will—which has given a new emotional basis to life, the most inspiring and most forward looking that the world has thus far seen. For, first the findings of physics, chemistry, and astronomy have brought to light a universe of extraordinary and unexpected orderliness, and of the wondrous beauty and harmony that go with order. It is the same story whether one looks out upon the island universes brought to light by modern astronomy, or whether he looks down into the molecular world of chemistry, or through it to the electronic world of physics. The sciences of geology, paleontology, and biology have brought to light even still more wonderfully an orderly development from lower to higher forms, from smaller up to large capacities.

And there is one further finding of modern science which has a tremendous

(Just turn the page)

ARCHAEOLOGY

Trojan War Again In Doubt

Helen of Troy wanders once more without a home in history.

The destruction of her city by the Homeric inhabitants of Greece and its islands, long thought well established by archaeological research, is now called in question by Dr. Erich Bethe, a professor at the University of Leipzig.

There is no question that there was a Troy, and that it was destroyed. As a matter of fact, there were nine Troys, and they were all destroyed. So much the earlier investigations showed. The ruins of nine successive cities, each built over the remains of its predecessors on the same site, were excavated by H. Schliemann, a German archaeologist, and of these the sixth was designated as the Troy of Helen and the great siege. The date of the destruction of this city was determined as about 1200 B. C.

But the recent excavations of Dr. Bethe have shown that though the destruction did take place, the destroyers were not Greeks or Mycenaeans, but northern barbarians from Thrace, who wanted to cross the Hellespont and settle in Asia Minor.

This city on the straits barred their way, so they destroyed it, and for centuries it was not rebuilt. Only a succession of wretched villages stood amid the ruins. All this is indicated by the numbers and distribution of lost or broken weapons and household utensils dug up in the ancient mound.

The first evidences of the incoming Greeks, Dr. Bethe states, belong to about 700 B. C. He believes that the Iliad dates only from about 600 B. C., instead of from the much earlier date assigned by tradition, though it was assembled out of poetic materials already in existence.

Science News-Letter, November 26, 1927

ASTRONOMY

Astronomy under Difficulties

Pray do not chide me, for that I,
Though of a studious age the scion,
In gazing at the summer sky
Cannot tell Vega from Orion.
I would be happy, if I knew
The names of all the constellations,
But when the firmament I view,
I yield to ancient incantations.

*Star light, star bright,
First star I've seen tonight,
Wish I may, wish I might
Have the wish I wish tonight.*

It is not that I underprize
Astronomy's sweet boon and blessing;
I wish I knew the teeming skies
By rote, for I am tired of guessing.
But always, when with chart and book
I sit, a truant from my bed,
After one sidereal look
Some strain starts running through
my head.

*Stars of the summer night,
Far in yon azure deeps,
Hide, hide your golden light;
She sleeps, my lady sleeps!*

I am a traitor to the times,
My science is in shreds and tatters,
Because a lot of scurvy rhymes
Have spoiled my mind for higher matters.
Poor mind! It struggles with the names
Of Cassiopeia and Mars,
But plays the silliest childish games
Whenever I observe the stars.

*Twinkle, twinkle, little star,
How I wonder what you are,
Up above the world so high,
Like a diamond in the sky!*
—S. K., in *Spokane Spokesman-Review*.

Science News-Letter, November 26, 1927

Patients Give Blood

Injections of immune blood from the convalescent youngster who has brought measles home from school has been utilized by Drs. Roy P. Forbes and Berryman Green of Denver, Colorado, to protect the younger brothers and sisters in the family.

When Junior in the second grade gets measles, four-year-old Sally and baby Charles of one and a half are at an age when the consequences of an attack are likely to be most serious. For it has been found that 90 per cent. of measles deaths occur under five years and 75 per cent. under two years of age.

Serum made from the blood of convalescing measles patients has been found very efficacious in conferring a temporary immunity on young children who have been exposed to the disease. Unfortunately there is never enough measles serum of this sort to meet the demand when an epidemic breaks out. Usually, says Dr. Forbes in a report of his work to the American Medical Association, parents of the convalescent child of school age

(Just turn the page)

EDUCATION

Greek Education

"Whom, then, do I call educated? First, those who manage well the circumstances which they encounter day by day and who possess a judgment which is accurate in meeting occasions as they arise and rarely misses the expedient course of action; next those who are decent and honorable in their intercourse with all men, bearing easily and good-naturedly what is unpleasant or offensive in others, and being themselves as agreeable and reasonable to their associates as it is humanly possible to be; furthermore, those who hold their pleasures always under control and are not unduly overcome by their misfortunes, bearing up under them bravely and in a manner worthy of our common nature; finally, and most important of all, those who are not spoiled by their successes and do not desert their true selves, but hold their ground steadfastly as wise and sober-minded men, rejoicing no more in the good things which have come to them through chance than in those which through their own nature and intelligence are theirs from birth. Those who have a character which is in accord, not with one of these things, but with all of them—these I maintain are educated and whole men, possessed of all the virtues of a man."

—Isocrates in *Panathenaicus*.

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Patients Give Blood

(Continued from page 347)

are unwilling that the child should contribute his blood for the sake of others even when a fair compensation is offered. But when the patient's blood is needed to protect an exposed brother or sister no objections are raised because most parents now realize the seriousness of measles in very young children.

The immune blood is taken when the young patient's fever begins to go down, normally about three days after the rash has appeared, and roughly about six days after the contacts have been exposed. Almost invariably it is the oldest child in the family, usually in school, according to Dr. Forbes, who first brings measles into the home.

The injections of the immune blood produce a very mild form of modified measles without any unpleasant complications, the physician stated. This method will probably be most useful, he explained, in the early weeks of an epidemic or in small communities where convalescent serum is not readily available.

Science News-Letter, November 26, 1927

MEMORANDUM

This blank space serves a dual purpose. It allows you to clip out the article on the reverse of this page without destroying any other article. It can also be used for notes and the recording of your own observations.

Evolutionary Religion

(Continued from page 347)

dous inspirational appeal. It is the discovery of the vital part which we ourselves are playing in the evolutionary process. For man himself has within two hundred years discovered new forces with the aid of which he is now consciously and very rapidly making over both his physical and his biological environment. . . .

It follows that the progress which man has made since history began has been due not to the betterment of his stock but rather primarily to the passing on of the accumulated knowledge of the race to the generation following after. The great instruments of progress are then research, the discovery of new knowledge, and education. This puts the immediate destinies of the race or of our section of the race, largely in our hands. This spirit and this conviction is the gift of modern science to the world. Is it then too much to say that modern science has remade philosophy and revived religion?

Science News-Letter, November 26, 1927

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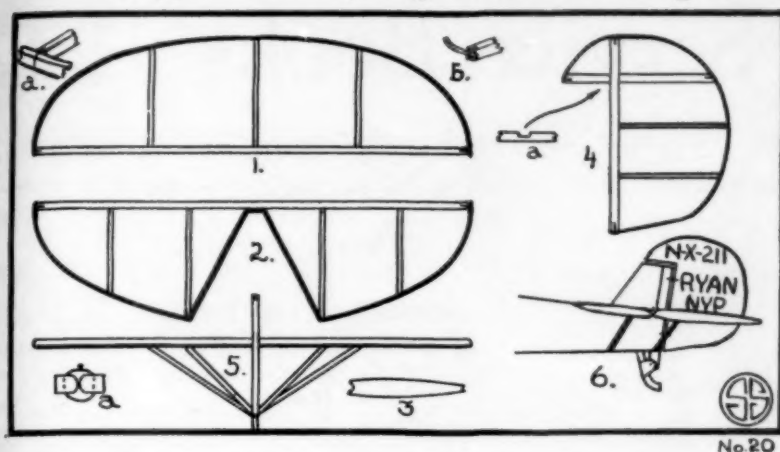
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Building and Flying Model Airplanes



No 20

This is the fifteenth of a series of articles by Paul Edward Garber, telling how to make model airplanes. Mr. Garber is in charge of aeronautics at the Smithsonian Institution.

The Tail Units

Four pieces comprise the tail units of this plane, namely the stabilizer, elevator, rudder and fin. In making the first three it will be found an advantage if full sized drawings of the parts are made, over which the pieces of wood are fitted and assembled. This method insures good joints and well shaped pieces. The stabilizer is shown in the above drawing, Fig. 1. It is made out of a spar, three ribs and an outline piece. The spar is $8\frac{1}{2}$ inches long and $3/16$ inch square. The center rib is $2\frac{1}{4}$ inches long and shaped as shown in Fig. 3. The ribs are glued or Ambroid in place and may be wired as shown in Fig. 1-a. The other two ribs are of similar shape but a trifle shorter in order to conform to the outline piece. The latter is made out of $1/16$ inch square bamboo which is heated over a candle flame at the points to be curved and bent to shape as was done for similar parts described in previous articles. The outline piece is fastened to the spar by making a "V" cut in the end of the spar and gluing and wiring the bamboo therein Fig. 1-b.

In some models the elevators are made in two pieces but in this one we will join them together as in Fig. 2. The dimensions and construction are similar to the stabilizer, making the outline like a "W" with the cross bar in the center $3/8$ inch long.

The rudder is made according to the drawing Fig. 4. The upright backbone is 4 inches long by $3/16$ inch square. The upper cross bar is 3 inches long by $3/16$ inch square; $3/4$ inch from the end of each a step is cut $3/16$ by $3/32$ inch as shown

in 4-a and the pieces are joined. The outline piece is shaped from $1/16$ inch square bamboo and fastened to the pieces as at 1-a. Two ribs similar in shape to Fig. 3 are Ambroid in place as shown.

These three surfaces are now to be covered. Light paper may be used for this purpose but this is liable to puncture easily, therefore China silk is preferable. Before applying the silk the spars and the rudder backbone are to have their edges curved in order that they may hinge easily, as shown in Fig. 5-a. A piece of silk a trifle longer in length and twice the width of the surface is used for the elevator. The spar is coated with glue or Ambroid and placed in the center of this cloth, and the adhesion well rubbed to insure a firm hold. The ribs and outline are then painted with adhesive on one side, and the fabric fastened thereon, all wrinkles being stretched out and the points of contact rubbed to insure adhesion. The silk is carried over the outline piece and after it is dry the surplus is trimmed off with a razor blade. The other side is then covered in a similar manner. When the adhesive is dry the surface must be "doped." This term means the application of a solution for shrinking and filling up the mesh of the fabric to make it air proof. Model supply houses carry special preparations for this purpose. As a substitute, collodion, or a solution of celluloid in banana oil may be used. Drug stores carry these products. If the latter is used the celluloid must be dissolved until the solution refuses to absorb any more, in other words, a saturated solution. If you are near a flying field real airplane dope can be used, thinned with acetone, another drug store product. The surface is doped with a thinly laid coat.

The elevator and rudder are covered in similar manner, care being taken to fit the fabric well around the "V" in the elevator and the joint in the rudder. In order to duplicate the appearance of the original these surfaces are now to be painted with aluminum paint. The rudder is lettered as shown in Fig. 6. It will be observed that the letters have curved sides, as in the original.

These surfaces are to be fastened with wire at intersecting points to the fuselage, Figs. 5 and 6 show how this is to be done. The stabilizer and elevator are hinged together as in Fig. 5-a with a piece of wire passed through holes in the spars and twisted tightly so that the surfaces may be moved but not be loose, then fasten in front of the rudder part. Double braces are to be used as shown in these figures, in each instance extending from the lower longeron out to the ribs. They are fastened with adhesive and wired or nailed if necessary. The rudder is hinged to the tail piece. The fin consists of a piece of cardboard or thin wood cut and glued in place as shown in Fig. 6.

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SEISMOLOGY

Four Earthquakes in Week

Three earthquakes were recorded by seismographs late Sunday night, November 13, and early on the morning of November 14, according to records received by Science Service from observatories at Georgetown University, Washington; The Dominion Observatory, Ottawa, Canada; and the Meteorological Observatory, Victoria, B. C.

After earthquake experts of the U. S. Coast and Geodetic Survey had studied the data, they stated that the third quake was the one felt in Chile. Its center, they said, was 31 degrees south latitude, and about 71 degrees west longitude, though the latter was somewhat uncertain. It appeared, however, to be near the coast, and not far from the center of a severe quake last April 14.

Borneo may have been the scene of a severe earthquake which occurred at 4.24 on Wednesday afternoon, November 16. By means of records from Georgetown University, Washington; the observatory of the Survey at Tucson, Arizona, and the Meteorological Observatory at Victoria, B. C., the earthquake experts of the Survey have estimated its approximate center as 2 degrees north latitude and 115 degrees east longitude.

Science News-Letter, November 26, 1927

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First Glances at New Books

EXPLORATIONS IN HITTITE ASIA MINOR, A Preliminary Report—Oriental Institute Communications No. 2—H. H. von der Osten—*University of Chicago Press* (\$1). Little known regions of the land of the Hittites have been explored with illuminating results by this expedition from the Oriental Institute. The data of the investigation provide a valuable background of information for the work of excavating Hittite settlements, which has already been begun.

Science News-Letter, November 26, 1927

STELLAR ASTRONOMY—Peter Doig—*Draughtsman* (London) (\$2). A very useful outline of present-day theories of the constitution, distribution and evolution of the stars, in 183 pages. This includes 16 appendices, which form a veritable storehouse of useful astronomical information not easily available elsewhere.

Science News-Letter, November 26, 1927

THAT MIND OF YOURS—Daniel B. Leary—*Lippincott* (\$1.75). A collection of articles which have appeared in newspaper form, and which introduce the reader to some psychological facts and theories that he can apply to himself.

Science News-Letter, November 26, 1927

CHILDREN OF ANCIENT GAUL—L. Lamprey—*Little, Brown* (\$1.75). This story book accomplishes the dual task of presenting for children a picture of life in France some 2,000 years ago and at the same time of narrating an exciting adventure.

Science News-Letter, November 26, 1927

CAMELS!—Daniel W. Streeter—*Putnam's* (\$2.50). A breezy, good-natured account of a safari up one of the branches of the Blue Nile, with numerous notes on the fauna—particularly the *Hominidae*—of the region.

Science News-Letter, November 26, 1927

THE TASK OF SOCIAL HYGIENE—Havelock Ellis—*Houghton, Mifflin* (\$2.25). Another edition of this well-known discussion of the relation of sex problems to society and the changing status of woman.

Science News-Letter, November 26, 1927

MY LIFE AS AN EXPLORER—Roald Amundsen—*Doubleday, Page* (\$3.50). A saga of adventure by one of the world's foremost explorers.

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DICTIONARY OF BACTERIOLOGICAL EQUIVALENTS—William Partridge—*Williams and Wilkins*. A companion volume to the same publishers' *Dictionary of Botanical Equivalents*. These books are invaluable to the harassed student struggling with the rapidly expanding technical vocabularies of the polyglot literature of modern science.

Science News-Letter, November 26, 1927

THE PROBLEM OF LAY-ANALYSES Sigmund Freud—*Brentano's* (\$2.50). In this comparatively small book the "father of psychoanalysis" has explained the subject in unusually simple language. As Dr. Ferenczi comments in the introduction, Freud "has a striking gift to make himself easily understood to the laity." The chapters of autobiography which close the book are particularly interesting, since they show Freud's background of experience and education so that the reader can trace the development of his famous theory.

Science News-Letter, November 26, 1927

ANT HILLS AND SOAP BUBBLES—Mary Geisler Phillips—*Macrae Smith*. An interesting mixture of fairy-tale and entomology, enlivened with Gilbertesque verse.

Science News-Letter, November 26, 1927

ADMINISTRATION OF PRIVATE SOCIAL SERVICE AGENCIES—W. W. Burke—*University of Chicago Press* (75c). A topical bibliography compiled for the use of students in this field.

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SECRETS OF GOOD HEALTH—Sir William Arbuthnot Lane—*Double-day, Page* (\$2). One of England's best known medical men gives simple instructions about how to keep well.

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THE NORMAL DIET—W. D. Sansum—*Mosby* (\$1.50). The fundamental principles of diet set forth for the use of both physician and patient. A sensible book that will interest all who plan meals.

Science News-Letter, November 26, 1927

RESEARCH ADVENTURES IN UNIVERSITY TEACHING—By eight authors—*Public School Publishing Co.* To the general public just shop, but by the same token valuable and interesting to teachers.

Science News-Letter, November 26, 1927

PSYCHIATRY

When Nerves Go Wrong

Quotation from *TWO SOULS IN ONE BODY? A Case of Dual Personality*—Henry Herbert Goddard—Dodd, Mead.

The dual experience was probably the most fortunate outcome of the very bad situation. Had it been otherwise her case would not have attracted the attention and received the treatment needed. Moreover, the duality itself was more favorable to a complete rest than any other outcome could have been. While Polly was holding the stage, Norma was asleep and that part of the brain was resting. It was a very genuine "escape from reality." While Polly's life was active, it was not intense. There were no serious worries and anxieties, such as Norma had to face. Thus if Norma's dual personality was the best outcome to be expected, what shall we say of what might have been? There is nothing much sadder than a life of chronic invalidism from neurasthenia—"nerves." . . .

Teachers and parents cannot be too strongly impressed with the significance of a frail nervous system. We should realize that, both at home and in the school, children are being forced into a state of ill health that differs from Polly's only in details. As we have stated, it was largely a matter of chance that the three factors that made inevitable a dual personality came together in Norma's case. Had they not happened to do so, Norma would simply have had a nervous breakdown without the spectacular dual personality. Under other circumstances, it might have been an ordinary case of insanity. The fundamental conditions are the same in all and the lesson to be learned is the same.

Science News-Letter, November 26, 1927

PSYCHOLOGY

Gorilla's Brain Good, But—

Quotation from *THE MIND OF A GORILLA*—Robert M. Yerkes—Clark University.

If, however, the gorilla is intellectually more highly developed than the orang-utan or chimpanzee, how can we account for the fact that it has lost relatively in the struggle for existence? We incline to believe that intelligence is a condition of success and survival. If in this we are correct, gorillas perhaps should be more abundant than chimpanzees or orang-utans; yet the opposite is true. I surmise that many other factors than those of intelligence have operated to extend or restrict the spread of the great apes and to determine their relative abundance. I am not convinced that superiority of intelligence assures human survival, type of man may from time to time have been swamped by inferior hordes.

Science News-Letter, November 26, 1927

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